REMARKS

Claims 1-13 and 16-19 were pending and rejected. Claims 9, 12 16 and 18 are being amended. Reconsideration is respectfully requested.

First, the Examiner requested a more descriptive title. Applicant is amending the title to make it more descriptive.

Second, the Examiner rejected claims 9, 12, 16 and 18 as directed to non-statutory matter. Applicant is amending claims 9, 12 and 16 to direct them to "processor-based" apparatus or system. Applicant is amending claim 18 to include a "computer-readable storage medium" in the body of the claim. Accordingly, Applicant respectfully submits that the claims are now clearly directed to statutory subject matter.

Third, the Examiner rejected the claims under 35 USC § 102 as unpatentable over Ofek.

Ofek is directed at a method and apparatus for switching between independent and simultaneous access to a common data set. (See title and abstract.) In other words, Ofek teaches a system that enables two or more processors (i.e., "hosts" per Ofek, see col. 7 line 57) to simultaneously access (read from and write to) common mirrored data sets or to enable independent processors to independently access (read from or write to) its own copy of the data set. During independent access, a first host accesses a first data set and a second host accesses the second data set. Because of this independence, the data sets can become different. Upon returning to a simultaneous operating mode, Ofek teaches a technique for synchronizing the independent data sets.

The claims are generally directed at a technique for backing up data in three logical storage volumes and a specific technique for restoring data in the primary logical volume. For example, claim 1 requires a backup procedure that includes,

> providing a first logical volume in the first storage subsystem and a second logical volume and a third logical volume in the second storage subsystem, the second

logical volume being a copied logical volume of the first logical volume, the first and second logical volumes being in sync state, the third logical volume being a copied logical volume of the second logical volume, the second and third logical volumes being in sync state; and

splitting the second logical volume and the third logical volume by a command from the first storage subsystem.

Further, claim 1 also requires a restoring procedure that includes,

mounting the third logical volume to the second host,
reading, at the second host, a file to be restored from the third volume,
writing, at the second host, the file to the second volume, and
re-synchronizing the first volume with the second volume.

The Examiner asserted that Figs. 1, 9, 11, 13, 17, 20 of Ofek and a variety of columns illustrate the restoring procedure. However, Ofek teaches a method of splitting originally mirrored data volumes to render two (or more) independent volumes, each independently controllable by an independent application. (See Fig. 9 and col. 17 lines 9-14 ("The host 220 in Fig. 9 can issue commands... to split the BCV device 226 as a mirror and reestablish a data transfer path with the volume 222") and col. 20 lines 47-51 ("Immediately after processing the SPLIT command, the device controller for the BCV device 226 makes it [the BCV device 226] available to the Volume B application 222 and isolates it [the BCV device 226] from the M1 and M2 mirror devices 224 and 225.").) Further, Ofek teaches a method of returning from the independent state, where each of the databases are being independently controlled by independent hosts, to a mirror state, where each of the devices are mirror copies of each other. (See col. 17 lines 9-18 ("The host 220 in Fig. 9 can issue commands... to reestablish the BCV device as a mirror") and col. 18 lines 1-4 ("In this particular case the ESTABLISH command effectively connects the BCV device 226 as an M3 mirror volume.").)

Nothing in Ofek teaches mounting the third logical volume to the second host, reading a file to be restored from the third volume, writing the file to the second volume (thereby enabling the first host to avoid having to use its processing power), and then re-synchronizing the first volume with the second volume (thereby restoring the first logical volume). Ofek only relates to setting up mirrors and enabling multiple applications to use those mirrors independently. Ofek does not relate to the specific method of restoring a file, e.g., a damaged or lost file, as claimed.

The Examiner suggests that cols. 16, 17, 18, 22, 23 and 26 illustrate the specific restore procedure claimed. Columns 16 and 17 are directed at establishing an initial configuration where the BCV, M1 and M2 devices are configures so that the BCV device is not a mirror of the M1 and M2 devices and so that the BCV device is dedicated to application B (referred to as "Volume B" in Fig. 9). Column 18 is directed at the ESTABLISH and SPLIT commands discussed above, which are commands for transitioning the BCV device between independent operation and mirror operation. Columns 22 and 23 are directed at the REESTABLISH and RESTORE commands. The REESTABLISH command returns the BCV device from the independent state to the mirror state. The RESTORE command enables full restoration of all the data on the BCV device to the mirror devices (e.g., when M1 and M2 become both completely corrupted, see col. 22 lines 57-62). Column 26 is directed at the synchronization result of a RESTORE or INCREMENTAL RESTORE command. As stated above, the RESTORE command enables full restoration of all the data on the BCV device to the mirror devices (e.g., when M1 and M2 become both completely corrupted, see col. 22 lines 57-62). The INCREMENTAL RESTORE command merely synchronizes the BCV device with the M1 and M2 mirrors.

None of the columns in Ofek describes a method of restoring a file, e.g., a corrupted file, by first restoring the file to the second logical volume in a backup storage subsystem and then synchronizing the second logical volume in the backup storage subsystem with the first logical volume in the production storage subsystem. Accordingly, Applicant respectfully submits that claims 1-13 and 16-19 are patentable over Ofek, and respectfully requests that the rejections be withdrawn.

Applicant respectfully requests reconsideration in view of the above amendments and remarks.

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Respectfully submitted,

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